

and in order to maintain it in its "natural" condition it would have been better if the Conservators had taken counsel with some of the numerous scientific societies of London which are representative of the various classes of natural history students and investigators. This is indeed the only point—but it is a serious one—on which we feel compelled to express our disappointment at the line of management taken up by the Conservators. The Epping Forest Committee consists of twelve members of the Corporation and four Verderers chosen septennially by the commoners of the Forest parishes. Now a Committee appointed to deal with a scientific question—and as such we regard the management of a forest—cannot altogether ignore the claims of natural history without incurring the risk of having their proceedings compared with the tragedy of Hamlet with the Prince of Denmark left out. The present Verderers are Sir T. Fowell Buxton, Mr. E. N. Buxton, the Chairman of the London School Board, Mr. Andrew Johnston, late High Sheriff of Essex, and Mr. D. J. Morgan. The names of these gentlemen encourage us to think that it is no fault of theirs if the claims of natural history science are altogether ignored.

How to deal with those waste stretches of land formerly under cultivation is a question quite distinct from the management of the wooded portions of the forest. While for the latter a minimum of interference would in our opinion be most in accordance with the views of all parties, there are ample opportunities of "landscape gardening" the former. In face of this fact it is somewhat surprising that the energies of the Conservators should thus far have been chiefly directed to alterations in the *natural* portions of the area under their charge, and we are glad to see that the Essex Naturalist's Field Club has taken the initiative in inviting the co-operation of all natural history students interested in the preservation of open spaces in their natural condition, in signing a protest against the destruction of the natural features of Epping Forest. The form of petition has been forwarded to all the scientific societies of London most concerned in this question, and has already received many influential signatures. If the dedication ceremony of last Saturday makes the freeing of the Forest an event in the history of this country, it seems but just that in a period pre-eminently distinguished for its scientific culture, the naturalists of London should urge their claims ere it be too late.

R. M.

### THE WINTER OF 1881-2

THE fine winter months of 1881-2, from November to March, have been characterised by a mildness rarely equalled in our British climate. Nowhere in the British Islands, from Scilly to Shetland, or from Dover to Valentia, was the mean excess above the normals of the temperature of these five months less than  $2^{\circ}\text{o}$ . This was the excess in the south of England; in central districts, such as Oxford and York, it rose to  $3^{\circ}\text{o}$ ; and the excess increased on advancing northward till it reached  $4^{\circ}\text{o}$  in the upper districts of the Tweed, Clyde, Tay, and Dee, and at Culloden, and Lairg. Everywhere on the coasts the temperature was from half a degree to a degree, relatively lower than in strictly inland situations.

In Scotland the mean temperature of each of the months exceeded its normal, except in a very few localities in December, when temperature was slightly under the average. Each of the other months had a temperature from  $2^{\circ}\text{o}$  to  $6^{\circ}\text{o}$  above the normal. In England, on the other hand, the temperature of January was pretty generally under the average, the deficiency amounting in some cases, as at Spurnhead, to nearly  $2^{\circ}\text{o}$ ; and in the central districts of Ireland the deficiency was even greater. In February, in a few districts of England, temperature fell

slightly below the normal, whereas, over large districts of Scotland, in the same month, it rose to at least  $5^{\circ}\text{o}$  above the normal.

As regards atmospheric pressure, its geographical distribution during these months was strikingly abnormal. In each month, as regards departures from the normals, there was an excess in the south, whereas in the north there was a deficiency, or if there was an excess at all, it was much less than in the south. The averages of the five months give an excess above the normal of  $0^{\circ}\text{188}$  inch at Torquay, and  $0^{\circ}\text{171}$  inch at Greenwich;  $0^{\circ}\text{116}$  inch at Llandudno;  $0^{\circ}\text{063}$  inch at Lissan, Tyrone, and  $0^{\circ}\text{088}$  inch at Sillloth;  $0^{\circ}\text{023}$  inch at Islay, and  $0^{\circ}\text{061}$  inch in East Lothian;  $0^{\circ}\text{011}$  inch at Monach, Outer Hebrides, and  $0^{\circ}\text{045}$  inch at Aberdeen; but a deficiency from the normal of  $0^{\circ}\text{019}$  inch at Kirkwall,  $0^{\circ}\text{048}$  inch at North Unst, and  $0^{\circ}\text{103}$  inch in Farö. It was to this unprecedentedly steep barometric gradient from south-east to north-west from the normals of these winter months, and the equally unprecedented predominance and force of south-westerly winds which resulted therefrom, that we owe the remarkable mildness of last winter. The extraordinarily high pressures which so frequently ruled on the Continent during the winter, and the all but rainless weather which accompanied these anti-cyclones, and the low state of many of the rivers on the one hand, and on the other the almost unbroken succession of storms which swept the Atlantic with their low pressures and destructive tempests of wind, may be pointed to as the outstanding features of the great atmospheric disturbance which has signalised the winter of 1881-82, of which the mildness of the weather in the British islands was merely an accompaniment.

If the winters of the north-east of Scotland, from which there are temperature observations since 1764, be examined, it is seen that the mean temperature of the five months from November to March have been  $2^{\circ}\text{o}$ , or more, above the normal during eighteen winters. These winters, with the amounts of the excess above the normal, are given in the following table, to which is added the excess or deficiency from the normals of each of the six summer months immediately following:—

Winters.	Excess above the normal.	April.	May.	June.	July.	Aug.	Sept.	Mean of six months.
1772-73	+2°0	+1°2	-1°4	-0°7	-1°5	+1°4	-1°2	-0°4
1777-78	+2°0	-0°2	+3°8	+4°4	+3°6	+1°8	-1°2	+2°0
1778-79	+5°2	+2°9	+1°7	+3°4	+7°4	+6°8	+3°5	+4°3
1780-81	+2°0	+3°5	+2°6	+5°1	+1°4	+0°0	-1°1	+1°9
1789-90	+4°2	-2°0	+1°2	-1°2	-3°3	0°2	-3°3	-1°5
1793-94	+3°6	+4°2	-0°7	+2°6	+3°6	8	+0°5	+1°6
1795-96	+2°3	+7°9	-0°9	-1°3	-3°5	+0°5	-0°2	+0°4
1827-28	+2°7	+0°6	+1°5	+1°8	-0°5	0°2	+1°7	+0°8
1831-32	+2°5	+1°2	-1°0	+0°8	-0°4	+0°2	+1°3	+0°4
1833-34	+3°2	+0°5	+2°6	+1°8	+1°2	+1°2	+1°2	+1°4
1834-35	+2°4	+0°0	-0°7	-0°8	-0°5	+1°9	-0°6	-0°1
1843-44	+3°8	+5°1	-0°9	-0°0	-1°2	1°6	+0°4	+0°3
1845-46	+4°1	+0°1	+3°5	+6°5	+1°3	+2°7	+6°5	+3°4
1848-49	+2°3	-1°9	+1°3	-2°2	-1°3	0°2	-0°4	-0°8
1850-51	+2°1	-1°4	+0°2	-0°9	-1°3	0°7	-0°4	-0°7
1857-58	+2°8	+0°1	-0°3	+4°4	-2°8	+1°2	+0°8	+0°6
1868-69	+2°2	+2°5	-4°5	-2°0	+1°7	0°9	+0°5	-0°5
1881-82	+4°1							
Means ...	+3°0	+1°4	+0°5	+1°3	+0°2	+0°8	+0°5	+0°8

Thus, so far as the north-east of Scotland is concerned,

the mildness of the winter of 1881-82 has only been twice exceeded, viz. in 1789-90, when it was  $4^{\circ}2$ , or  $0^{\circ}1$  more, and in 1778-79, when it was  $5^{\circ}2$ , or  $1^{\circ}1$  more. The winter of 1845-46 showed the same excess as last winter.

We also gather from the table that these winters, which gave a mean excess of  $3^{\circ}0$ , were immediately followed by summers warmer than usual, the mean six months' excess being about a degree ( $0^{\circ}8$ ). Indeed, of the whole seventeen summers, only one, viz. the summer of 1790, can be considered as showing a deficiency of temperature sufficiently great and prolonged to be regarded as attended with serious consequences to agriculture. The table is a striking general confirmation of the prognostic long and widely entertained that a mild winter is the precursor of a fine warm summer.

### SEVRES PORCELAIN AND SCIENCE

THAT the French should know better than any other nation how to enlist art in the service of science is just what might be expected. Such a service on the part of art to science is only a fair return for the immense resources which scientific research has been able to place at the disposal of art. Nowhere have the discoveries of science been more useful or more utilised than at the celebrated porcelain manufactory of Sèvres, and the illustrations which we give to day will afford some idea of the beautiful results which are thus produced. As a permanent record of successful scientific efforts, nothing could be more satisfactory and appropriate. In Fig. 1 the characteristic features of the Arctic regions are rendered with almost perfect success and truthfulness; while the allegorical representation in Fig. 2, in commemoration of the last transit of Venus, is happy in conception, and charming in effect. Of the artistic merits of the two vases our readers can judge for themselves. It may be interesting to give some idea of the difficulties attending the manufacture of such delicate productions, which we are able to do, from a lecture by M. Ch. Lauth, Administrator of the Sèvres manufactory, published in *La Nature*, to which journal also we are indebted for our illustrations.

Fig. 1 represents a vase which has been presented to King Oscar of Sweden, and is one-eighth of the original size. The splendid vase represented in Fig. 2 is still only in course of execution, and when complete will be placed in the Mazarin Gallery of the French National Library; it will be ten times the size of the illustration. M. Lauth thinks the national institution at Sèvres should be organised more as a school for the training of workers in the delicate art, than as a mere manufactory. The art of fixing colours on pottery, M. Lauth tells us, differs essentially from that which deals with the colouring of any other medium. There is required in the materials perfect adhesion, absolute resistance to atmospheric influences, and a brilliancy which will make the colours seem part of the object itself. As the colours must be subjected to a very high temperature, there must be eliminated from the palette of the ceramic artist all organic colouring matter, and all the unstable mineral colours; he must have recourse to oxides, metallic silicates, or to metals. And the fixation of these colours is always the result of a chemical action, of a combination which takes place at a high temperature between the body of the porcelain and the matters used in its decoration. Many different methods are used for the purpose, but they are divided into two great classes—decoration at great heat, and the decoration by muffle, an oven of a special kind.

The former consists in applying to the porcelain, colouring substances, which are fixed and developed at the same temperature as that at which the porcelain is baked; this is how the most valued results are attained; as the enamel covers the colour, it assumes an extreme

brilliancy and depth—it becomes part and parcel of the object itself. This is how the magnificent blue of Sèvres is obtained, as well as certain browns and blacks, and a few other combinations. The colours may be either mixed on the paste, or put upon the object when moulded, before enamelling, or mixed on the object itself when complete; they may be also applied to porcelain already baked, which may be again baked at the higher tempera-



FIG. 1.—Sèvres Vase, commemorative of the North-East Voyage of Earon Nordenskjöld (4).

ture. This is notably the process employed at Sèvres for their blues. One of the most brilliant varieties of decoration at high temperature consists in what is called the process of *pâtes d'application*. This method consists in painting by the brush on porcelain unbaked or heated; by successive and carefully adjusted applications, a very great thickness is attained, by sculpturing which the artist can give the decoration a re-